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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MENON, KRISHNAN S

ART UNIT PAPER NUMBER

1723

5

DATE MAILED: 07/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/759,920

Examiner

Krishnan S Menon

Applicant(s)

KELLY ET AL.

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) 2,23,25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 3,4,9,10, of this application. The referenced claims depend on the "zeta potential" of the filter. However, the provisional application number 60/176363 does not specify the zeta potential for the filters. Moreover, the figures 3-9 in the provisional application do not seem to agree with the figures 3-7 of the instant application. Figures 4-7 in the instant application and the corresponding disclosure in the specification seem to be new matter when compared to the figures in the provisional application.

### *Claim Objections*

Claim 2 is objected to because of the following informalities: the phrase "wherein the fluid is an aqueous ..." is repeated. Appropriate correction is required.

Claim 25 is objected to because of the following informalities: "acrylamide monomers" is repeated. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

1. Claim 31 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The term "...pores filter..." is ambiguous, and the "... diameter between ..." reads as if that of the diameter of

Art Unit: 1723

the filter itself. The claim will be acceptable if corrected to read "... (pore) porous filter..." and "... nominal pore diameter between.."

2. Claims 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 20, the phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

### *Double Patenting*

Claim 23 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 22. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Applicant is advised that should claim 22 be found allowable, claim 23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,5,7,8,11-13,19-26, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Pall (US 4,431,545).

Pall (545) discloses a liquid filter, a system and a method (by examples) comprising two filters in series (abstract) with pore dia from 0.1 to 10 microns (col 1:15-25) and 0.1 to 1.0 micron (abstract) and the surface substantially neutral in selected fluids as described within the disclosure of the instant application. The instant application discloses zeta potential of -10 to +10 mV for the "neutral filter". The instant application also shows that the LRV is 3 only when the membrane and the particles have opposite charges (fig 6 and 7). LRV falls below 3 when the membrane and the particles have same charge. The fluid could be aqueous for Pall (545). Pall discloses LRVs >3 (99.99% removal corresponds to an LRV of 4) (abstract). Pall (545) has membrane inherently neutral (col 2: 18-60), and discloses surface modifications (col 7: 10-68), materials such as Polyolefins, fluorinated polymers, acrylic acid and acrylate surface modifiers (col 8: 38-55). The surface IEP with pH of Pall (545) filter is described as neutral to changing from positive to negative (col 5:55-65).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1723

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 3,4,6,9,10, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pall (545) in view of Pall (US 4,617,124).

Pall (545) discloses a liquid filter, a system and a method (by examples) comprising two filters in series (abstract) with pore dia from 0.1 to 10 microns (col 1:15-25) and 0.1 to 1.0 micron (abstract) and the surface substantially neutral in selected fluids as described within the disclosure of the instant application. The instant application discloses zeta potential of -10 to +10 mV for the "neutral filter". The instant application also shows that the LRV is 3 only when the membrane and the particles have opposite charges (fig 6 and 7). LRV falls below 3 when the membrane and the particles have same charge. The fluid could be aqueous for Pall (545). Pall discloses LRVs >3 (99.99% removal corresponds to an LRV of 4) (abstract). Pall (545) has membrane inherently neutral (col 2: 18-60), and discloses surface modifications (col 7: 10-68), materials such as Polyolefins, fluorinated polymers, acrylic acid and acrylate surface modifiers (col 8: 38-55). The surface IEP with pH of Pall (545) filter is described as neutral to changing from positive to negative (col 5:55-65).

Pall (545) is silent on the actual values of the zeta potential, stating simply that it should be less than 20 mV. Pall (124) teaches the values of the "positive" filter as less than 10 mV, or even less than 5 mV (Tables IV-VI). It would be obvious to one of ordinary skill in the art at the time of

Art Unit: 1723

invention to use Pall (124) teachings to have a filter, filtering system or a method of filtration wherein the filter surface Zeta potential is between  $-5$  and  $+5$  mV, or close to being neutral to selective liquids and pH range for the Pall (545) two-filter in series system. One of ordinary skill in the art at the time of invention could chose such a filter or system as alternate but equivalent product and/or system.

Claim 17: Pall (545) does not disclose cellulosic materials for the filter. However, one of ordinary skill in the art at the time of invention would know that cellulosic materials could be used as alternate and would be equivalent to the materials Pall (545) teaches.

2. Claims 14,15 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pall (545) or Mayhan (US 4,311,573).

Pall (545) discloses a liquid filter, a system and a method (by examples) comprising two filters in series (abstract) with pore dia from 0.1 to 10 microns (col 1:15-25) and 0.1 to 1.0 micron (abstract) and the surface substantially neutral in selected fluids as described within the disclosure of the instant application. The instant application discloses zeta potential of  $-10$  to  $+10$  mV for the "neutral filter". The instant application also shows that the LRV is 3 only when the membrane and the particles have opposite charges (fig 6 and 7). LRV falls below 3 when the membrane and the particles have same charge. The fluid could be aqueous for Pall (545). Pall discloses LRVs  $>3$  (99.99% removal corresponds to an LRV of 4) (abstract). Pall (545) has membrane inherently neutral (col 2: 18-60), and discloses surface modifications (col 7: 10-68), materials such as Polyolefins, fluorinated polymers, acrylic acid and acrylate surface modifiers (col 8: 38-55). The surface IEP with pH of Pall (545) filter is described as neutral to changing from positive to negative (col 5:55-65).

Art Unit: 1723

Pall (545) fails to disclose cross-linking or grafting modification to the filter surface. Mayhan (573) teaches such modifications. It would be obvious to one of ordinary skill in the art at the time of invention to use the Mayhan (573) teachings to modify the surface of the Pall (545) filters as alternate but equivalent product compared to the instant application for equivalent function.

3. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pall (545) in view of McRay (US 5,582,725).

Pall (545) does not disclose ceramics or metals as the filter media. McRay (725) discloses ceramics and metals as filter media (col 2:20-33). One of ordinary skill in the art at the time of invention could chose metal or ceramic materials as alternate but equivalent to the materials in Pall (545) teachings for the filters, and the metals could be stainless steel, etc.

4. Claims 27, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pall (545) in view of Alder (US 5, 922,612).

Pall (545) does not disclose a cross-linker and a photo initiator with the acrylic acid surface modification. Alder (612) teaches such cross-linking reactions with photo initiators and N-N methylene bis acrylamide for formation of hydrophilic polymer films. One of ordinary skill in the art at the time of invention could chose the teachings of Adler (612) to obtain surface modified filters for use as taught by Pall (545) as an alternate but equivalent filter having equivalent function.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:



Art Unit: 1723

1. Ohmura (US 6,312,950), blood filter with a stack of filters in series showing zeta potential effects

2. Raghavan (US 5,531,900), microporous PVdF filter with Zeta potential effects

3. Onodera (US 5,407,581): negatively charged membranes

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan S. Menon  
Patent Examiner  
July 1, 2002

*Joseph W. Drodge*  
JOSEPH W. DRODGE  
PRIMARY EXAMINER